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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Air Force **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>					PE 0603742F: <i>Combat Identification Technology</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	-	37.039	32.243	15.899	-	15.899	29.116	28.203	26.298	26.771	Continuing	Continuing
642597: <i>Non-cooperative Identification Subsystems</i>	-	34.948	22.879	14.025	-	14.025	27.217	26.271	24.333	24.771	Continuing	Continuing
642599: <i>Cooperative Identification Techniques</i>	-	2.091	9.364	1.874	-	1.874	1.899	1.932	1.965	2.000	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Combat Identification (CID) Technology program element analyzes, develops, demonstrates and evaluates promising target identification technologies to facilitate platform transition decisions prior to Engineering and Manufacturing Development (EMD). Numerous joint needs statements, operational documents, lessons learned, and NATO requirements state the need for positive CID. High confidence CID increases combat effectiveness, prevents fratricide, and reduces collateral damage. It also enables combatant commanders to effectively command and control their forces in all weather, day or night. This program element focuses on the cooperative and non-cooperative technologies that have the capability to positively identify surface and air targets in both air-to-surface and air-to-air engagements.

In order to rapidly make available promising CID technologies for platform EMD decisions, the program element funds design studies, engineering analysis, and other efforts associated with demonstration of prototype CID related technologies and subsystems on platforms. It also supports the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an Electro-Optical/Infrared (EO/IR) imaging system that significantly increases ID ranges and includes exploiting synergies between non-cooperative and cooperative identification systems (radio, millimeter wave, infrared, and laser).

Cooperative CID employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide AF platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative ID capabilities. Development funded by this program element ensures availability of a Mode 5 IFF (Identify Friend or Foe) upgrade path for implementing ground and air platforms across the Air Force fleet. Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

UNCLASSIFIED

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3600: Research, Development, Test & Evaluation, Air Force		PE 0603742F: Combat Identification Technology			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	38.447	32.243	25.052	-	25.052
Current President's Budget	37.039	32.243	15.899	-	15.899
Total Adjustments	-1.408	0.000	-9.153	-	-9.153
• Congressional General Reductions	-	0.000			
• Congressional Directed Reductions	-	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	-	0.000			
• Congressional Directed Transfers	-	0.000			
• Reprogrammings	-0.273	0.000			
• SBIR/STTR Transfer	-1.135	0.000			
• Other Adjustments	0.000	0.000	-9.153	-	-9.153
Change Summary Explanation					
FY14 funding reduced to support higher AF priorities.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology				PROJECT 642597: Non-cooperative Identification Subsystems			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
642597: Non-cooperative Identification Subsystems	-	34.948	22.879	14.025	-	14.025	27.217	26.271	24.333	24.771	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Non-cooperative Combat Identification (CID) employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an electro-optical/infrared (EO/IR) imaging system that significantly increases identification ranges and includes exploiting synergies between non-cooperative and cooperative ID systems (radio, millimeter wave, infrared, and laser). The Laser Vision Program is working on performance improvements, laser vibrometry development, 3-dimensional laser detection and ranging, laser radar, synthetic aperture laser (SAL) radar, hyper spectral phenomenology exploitation, aided/automatic target recognition, image fusion and studies to support decisions on future EO/IR technologies; (2) Radar Vision, an air-to-ground radar imaging technique to identify stationary and moving targets using their radar signatures; (3) Hydra Vision, a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets potentially including fusion with intelligence sources, identification of non-traditional targets, fusion to counter camouflage, concealment and deception (CCD), and multi-phenomenology features for sustainable databases; (4) Compact ATR (Aided Target Recognition) and Sustainable Environments (CASE), a CID approach that focuses on tailoring algorithms to utilize smaller, more efficient databases that are faster and less expensive to generate and maintain is scheduled to be a new start in FY14; and (5) X-Patch, a validated set of prediction codes and analysis tools that predicts realistic far-field radar signatures from 3D target models in order to predict 1D and/or 2D data. X-Patch is vital for development of radar signatures of potential high-threat weapons systems; it is a critical capability of database production centers which support Joint Sensors Signature Database (JSSD) pathfinders.												
Activities also include studies and analysis to support both current program planning and execution and future program planning.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2012	FY 2013	FY 2014	
Title: Laser Vision/3D Ladar									0.431	1.600	0.000	
Description: Laser Vision, a family of electro-optical (EO) systems that significantly increase ID ranges. Provides the demonstration and evaluation data necessary to support decisions on future EO technologies supporting CID. Includes 3-D imaging laser radar (Ladar) and exploration of advanced concepts.												
FY 2012 Accomplishments:												

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Completed plan for 3-D Ladar efforts. Established 3-D measures of performance and conducted a CID signature study. Continued advanced concept exploration. FY 2013 Plans: Continue 3-D Ladar development by evaluating candidate sensors and selecting a demonstration system. Provide a laboratory demonstration of 3D visualization. Continue advanced concept exploration. FY 2014 Plans: N/A				
Title: Laser Vision/Siren Description: Develop, demonstrate and evaluate a laser vibrometry sensor in a targeting pod and its utility as a low cost CID discriminator. FY 2012 Accomplishments: Completed system description and requirements review. Initiated sensor design. FY 2013 Plans: Conduct design reviews and procure long lead items. Initiate vibrometry aided target recognition (ATR) development. FY 2014 Plans: Will continue fabrication of the demonstration system and lab testing. Will continue ATR development.		3.053	4.564	5.030
Title: Radar Vision Description: The Radar Vision (RV) technology applies Aided Target Recognition (ATR) algorithms to Radar Imagery and Radar Signature returns which puts target ID labels on the radar imagery and tracks using a common database of target signatures. Develop technologies that can utilize new wide area radar sensors and signal processing. FY 2012 Accomplishments: Performed final airborne demonstration of real-time combined fixed and moving target combat identification capability. Continued denied target development. Initiated project to develop technologies that can utilize new wide area radar sensors and signal processing for improved all weather day and night combat identification. FY 2013 Plans:		5.358	1.000	0.000

UNCLASSIFIED

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APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>		PROJECT 642597: <i>Non-cooperative Identification Subsystems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Complete detailed final performance evaluation of combined fixed and moving target combat identification capability including algorithms and real sensor data. Complete denied target development and demonstration. Complete development and implementation of technologies that will utilize wide area radar identification. FY 2014 Plans: N/A					
Title: Passive RF ID Description: Develop passive RF target ID capability for denied access environment utilizing passive RF and EW information for non- traditional ISR. Passive RF ID is a new start in FY14. FY 2012 Accomplishments: N/A FY 2013 Plans: N/A FY 2014 Plans: Will explore concepts for RF-based CID to include bistatic / multi-static, passive incorporation of electronic warfare techniques and multi-mode applications.			0.000	0.000	0.200
Title: Hydra Vision Description: Hydra Vision (Multi-Sensor Enhanced ID) is a family of balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets. FY 2012 Accomplishments: Air to Air: conducted data collections and completed an operational database. Air to Ground: efforts integrated ATR fusion elements into a complete system. Initiated planning for a lab demonstration. FY 2013 Plans: Air to Air: continue ATR development and preparation for a real time demonstration. Air to Ground: complete a lab and flight demonstration as well as ATR performance evaluation. Initiate Compact ATR and sustainable environments (CASE) technology analysis efforts in compact feature and missionized ATR. FY 2014 Plans:			5.801	8.506	2.921

UNCLASSIFIED

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APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology	PROJECT 642597: Non-cooperative Identification Subsystems		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Air to Air: will continue to refine fusion algorithms to maximize performance. Will demonstrate 2 feature fusion with ground based radar. Air to Ground: will complete ATR performance evaluation and plan for an operational demonstration.				
Title: Compact ATR and Sustainable Environment (CASE) / Missionized ATR (MATR) Description: CASE is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative ATR technology. Develop sustainable multi-phenomenology ATR based on low fidelity, compact, and inexpensive database technology.(Compact Feature ATR) Utilizes battlefield knowledge to improve CID capability by optimizing algorithm performance using real time mission data. (Missionized ATR / MATR) FY 2012 Accomplishments: N/A FY 2013 Plans: N/A FY 2014 Plans: Will begin technology development in compact feature and missionized ATR initiated in Hydra Vision. Will analyze feature extraction / uncertainty using low fidelity / physical feature target models. Will create compact feature ATR database and assess saliency and target discrimination utility. Will establish intelligence data paths into ATR and insert context reasoning and adaptive tuning into ATR. Will develop on-the-fly database insertion.		0.000	0.000	1.474
Title: Enhanced Combat Identification (ECID) Description: Develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities. FY 2012 Accomplishments: Determined approach and selected EADSIM (Extended Air Defense Simulation) as the baseline M&S tool. FY 2013 Plans: Develop and refine M&S tools. Define mission scenarios to exercise and evaluate analysis capability. FY 2014 Plans:		1.000	1.500	0.900

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013	FY 2014
Will apply M&S capability to real world CID technology evaluation.				
Title: Studies Description: Conduct CID-related studies/demos. FY 2012 Accomplishments: Continued AFIT related CID projects and studies. Funded Anomalies in Hyper Spectral Imaging (HSI) and Improved Hyperspectral Image Processing Algorithm Testing Using Synthetic Imagery as two of our AFIT studies. FY 2013 Plans: Continue study projects leading to new concepts for non-cooperative and cooperative CID efforts. FY 2014 Plans: N/A		1.178	1.548	0.000
Title: X-Patch Description: X-Patch consists of software code refinement based on feedback from the X-Patch user community. FY 2012 Accomplishments: Continued funding X-Patch RDT&E tool development and sustainment. FY 2013 Plans: Continue funding X-Patch RDT&E tool development and sustainment. FY 2014 Plans: Will continue funding X-Patch RDT&E tool development and sustainment.		2.868	3.161	2.500
Title: Automatic Dependent Surveillance-Broadcast (ADS-B) Description: Automatic Dependent Surveillance-Broadcast (ADS-B) Technology Insertion Program (TIP): This program element will fund preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA IFF (Identify Friend or Foe)transponder. The ADS-B TIP will develop ADS-B "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2(M5L2) to achieve M5L2 "Out" capability. The ADS-B TIP specifically addresses implementing air platforms. FY 2012 Accomplishments: Continued ADS-B TIP development of hardware and software into the APX-119 transponder. Awarded contracts Phase 1A and 1B. FY 2013 Plans:		13.960	0.000	0.000

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
N/A			
FY 2014 Plans: N/A			
Title: Program Management Activity		1.299	1.000
Description: Program costs for program offices support contractor, travel and overhead costs.			
FY 2012 Accomplishments: Funded program costs for contractors, travel, and overhead costs.			
FY 2013 Plans: Fund program costs for contractors, travel, and overhead costs.			
FY 2014 Plans: Will fund program costs for contractors, travel, and overhead costs.			
Accomplishments/Planned Programs Subtotals		34.948	22.879
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).			
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

UNCLASSIFIED

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Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Radar Vision (Denied Target/Increment 5) & Hydra Vision (Air to Air)	C/CPFF	Northrop Grumman:Linthicum Heights, MD	-	3.610	Nov 2011	0.500	Nov 2012	1.000	Dec 2013	-		1.000	Continuing	Continuing	TBD
Radar Vision (Increment 5) & Hydra Vision	C/CPFF	Raytheon Company:El Segundo, CA	-	2.727	Dec 2011	1.550	May 2013	0.760	Mar 2014	-		0.760	Continuing	Continuing	TBD
SIREN	C/CPFF	Northrop Grumman:Rowling Meadows, IL	-	3.553	Nov 2011	4.000	Jan 2013	4.700	Feb 2014	-		4.700	Continuing	Continuing	TBD
SIREN VAMP - ALTAR	C/CPFF	SAIC:McLean, VA	-	0.000	Nov 2012	0.300	May 2013	0.330	Jan 2014	-		0.330	Continuing	Continuing	TBD
Laser Vision - 3D Ladar AMP	C/CPFF	DRS RSTA Inc.:Dallas, TX	-	0.431	Sep 2012	1.500	Jan 2013	0.000	Feb 2014	-		0.000	Continuing	Continuing	TBD
Signature Center, Hydra Vision	C/CPFF	SAIC:McLean, VA	-	0.705	Jan 2012	0.755	May 2013	0.000	Feb 2014	-		0.000	Continuing	Continuing	TBD
Radar Vision & Hydra Vision	C/CPFF	General Dynamics:Beavercreek, OH	-	0.757	Dec 2011	0.250	May 2013	0.000	Jan 2014	-		0.000	Continuing	Continuing	TBD
Compass Center - Evaluation	C/CPFF	Jacobs:Ft. Walton Beach, FL	-	0.575	Dec 2011	0.375	Jan 2013	0.000	Jan 2014	-		0.000	Continuing	Continuing	TBD
Target Recognition & Tracking Technology	MIPR	Sandia:Albuquerque, NM	-	1.400	Dec 2011	1.330	May 2013	0.000		-		0.000	Continuing	Continuing	TBD
Studies	MIPR	AFIT, NASIC:Dayton, OH	-	0.050	Apr 2012	0.050	Jul 2013	0.000		-		0.000	Continuing	Continuing	TBD
Studies - ECID	MIPR	Booz Allen Hamilton:McLean, VA	-	1.000	Mar 2012	2.000	Jun 2013	0.900	Apr 2014	-		0.900	Continuing	Continuing	TBD
Hydra Vision - Air to Ground	C/CPFF	BAE Systems:Burlington, MA	-	1.981	Jan 2012	1.000	May 2013	0.000	Feb 2014	-		0.000	Continuing	Continuing	TBD
Hydra Vision- Ops Demo	C/CPFF	General Atomics:San Diego, CA	-	0.240	Nov 2012	0.800	May 2013	1.161	Feb 2014	-		1.161	Continuing	Continuing	TBD

UNCLASSIFIED

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Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hydra Vision - SCEPTIC	C/CPFF	Intelligent Software Solutions:Colorado Springs, CA	-	0.275	Jan 2012	0.050	Feb 2013	0.000		-		0.000	Continuing	Continuing	TBD
Hydra Vision - Study	C/CPFF	Ohio State University:Columbus, OH	-	0.200	Apr 2012	0.000		0.000		-		0.000	Continuing	Continuing	TBD
X-Patch	MIPR	GSA:Atlanta, GA	-	1.621	Mar 2012	1.554	May 2013	1.200	Jan 2014	-		1.200	Continuing	Continuing	TBD
Radar Vision & Hydra Vision - Core Database	C/CPFF	McAulay Brown:Dayton, OH	-	0.025	Jul 2012	0.050	May 2013	0.000		-		0.000	Continuing	Continuing	TBD
Hydra Vision - MATR Demo & Analysis	C/CPFF	TBD:TBD,	-	0.000		1.000	Jun 2013	0.000		-		0.000	Continuing	Continuing	TBD
Hydra Vision - Compact ATR & Sustainable Environment Analysis	C/CPFF	TBD:TBD,	-	0.000		2.430	Mar 2013	0.000		-		0.000	Continuing	Continuing	TBD
Compact Feature ATR	C/CPFF	TBD:TBD,	-	0.000		0.000		1.474	Jan 2014	-		1.474	Continuing	Continuing	TBD
Missionized ATR	C/CPFF	TBD:TBD,	-	0.000		0.000		0.000	Jan 2014	-		0.000	Continuing	Continuing	TBD
ADS-B Technology Insertion Program: Phase 1A & 1B	SS/CPFF	Raytheon:Baltimore, MD	-	2.149	Jul 2012	0.000		0.000		-		0.000	Continuing	Continuing	TBD
ADS-B Technology Insertion Program: Phase 2 & 3	SS/CPFF	Raytheon:Baltimore, MD	-	10.051	Jan 2013	0.000		0.000		-		0.000	Continuing	Continuing	TBD
Passive RF ID	C/CPFF	TBD:TBD,	-	0.000		0.000		0.200	Aug 2014	-		0.200	Continuing	Continuing	TBD
Subtotal			0.000	31.350		19.494		11.725		0.000		11.725			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Program Office support	Various	ESC HSJJ:Hanscom AFB, MA	-	0.093	Oct 2011	0.100	Oct 2012	0.000		-		0.000	Continuing	Continuing	TBD

UNCLASSIFIED

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Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Force Research Laboratory	Various	AFRL:Dayton, OH	-	0.017	Oct 2011	0.000		0.000		-		0.000	Continuing	Continuing	TBD
Robins AFB (X-Patch)	MIPR	402 MXW/ OBWB:Robins AFB, GA	-	1.048	Oct 2011	1.661	May 2013	1.300	Dec 2013	-		1.300	Continuing	Continuing	TBD
Providing various technical support and assessing ADS-B capabilities. MITRE	C/T&M	MITRE:Bedford, MA	-	0.323	Oct 2012	0.100	Apr 2013	0.000	Mar 2013	-		0.000	Continuing	Continuing	TBD
Subtotal			0.000	1.481		1.861		1.300		0.000		1.300			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Radar Vision & Hydra Vision	MIPR	46th Test Wing:Eglin, FL	-	0.225	May 2012	0.314	Dec 2012	0.000		-		0.000	Continuing	Continuing	TBD
Radar Vision/Denied Target	MIPR	Aberdeen Test Center:Aberdeen, MD	-	0.065	Mar 2012	0.050	Jan 2013	0.000		-		0.000	Continuing	Continuing	TBD
Radar Vision/Hydra Vision	MIPR	MSIC/AMRDEC/ RTTC:Redstone Arsenal, AL	-	0.618	Apr 2012	0.160	Jun 2013	0.000		-		0.000	Continuing	Continuing	TBD
Subtotal			0.000	0.908		0.524		0.000		0.000		0.000			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ESC PMA	Various	Jacobs, Odyssey, MITRE:Hanscom AFB, MA	-	0.473	Oct 2011	0.000		0.000		-		0.000	Continuing	Continuing	TBD
AFRL PMA	MIPR	GSA:Denver, CO	-	0.407	May 2012	1.000	Apr 2013	1.000	Feb 2014	-		1.000	Continuing	Continuing	TBD

UNCLASSIFIED

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Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AFRL Hydra Vision	C/T&M	SAIC:McLean, MD	-	0.300	Jan 2012	0.000		0.000		-		0.000	Continuing	Continuing	TBD
ADS-B A&AS SCS	C/T&M	Tecolote:Bedford, MA	-	0.029	Aug 2012	0.000		0.000		-		0.000	Continuing	Continuing	TBD
Subtotal			0.000	1.209		1.000		1.000		0.000		1.000			

	All Prior Years	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	34.948	22.879	14.025	0.000	14.025			

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

3600: Research, Development, Test & Evaluation, Air Force
BA 4: Advanced Component Development & Prototypes (ACD&P)

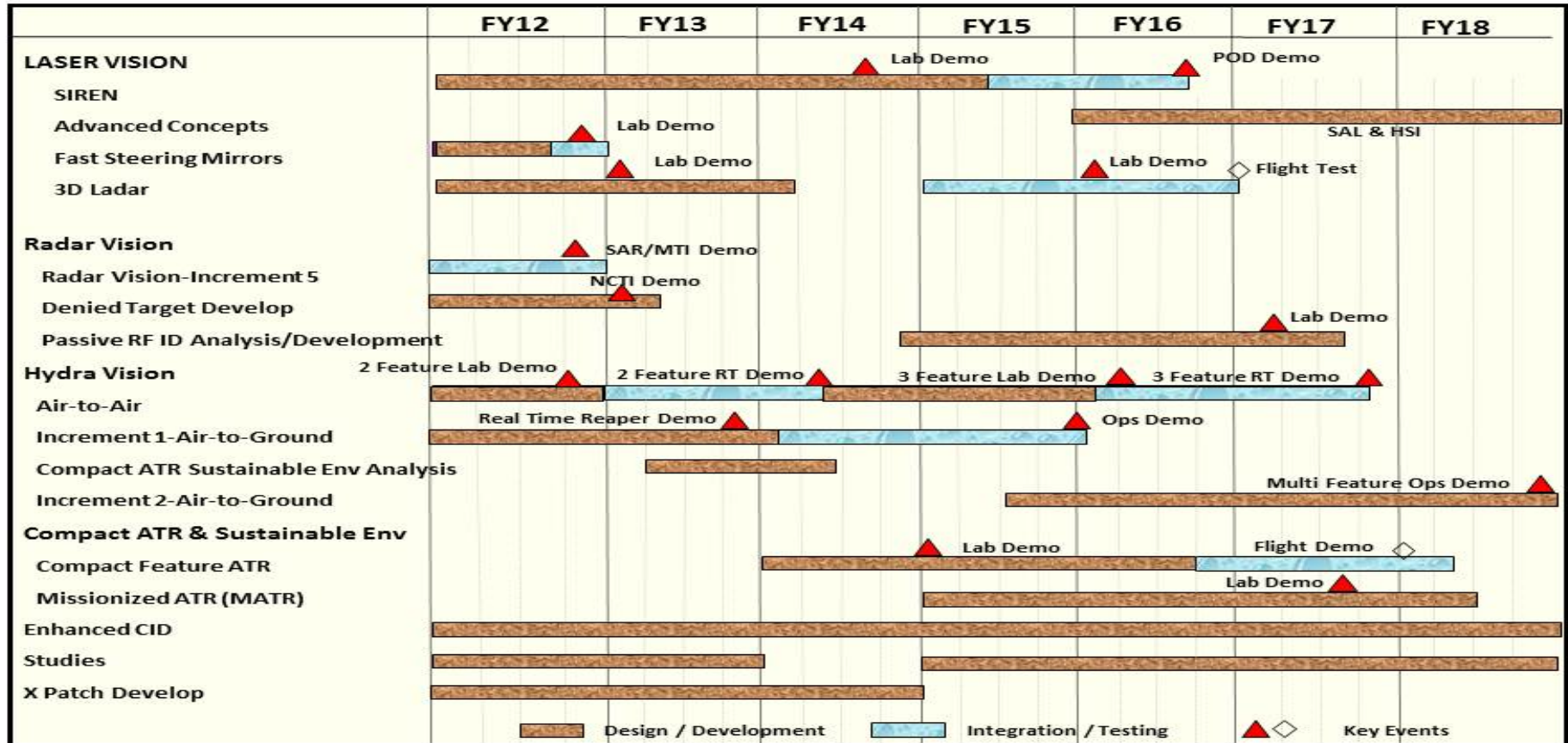
R-1 ITEM NOMENCLATURE

PE 0603742F: Combat Identification Technology

PROJECT

642597: Non-cooperative Identification Subsystems

Non-Cooperative CID Technology Schedule



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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642597: <i>Non-cooperative Identification Subsystems</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LASER VISION - Siren	1	2012	3	2016
LASER VISION - Advanced Concepts	1	2016	4	2018
LASER VISION - Fast Mirror Technology Insertion	1	2012	1	2013
LASER VISION - 3D Ladar	1	2012	1	2014
LASER VISION - 3D Ladar - Integration / Testing	1	2015	1	2017
LASER VISION - 3D Ladar - Flight Test	1	2017	1	2017
RADAR VISION - Radar Vision Increment 5	1	2012	4	2012
RADAR VISION - Denied Target Development	1	2012	2	2013
RADAR VISION - Passive RF ID Analysis/Development	4	2014	3	2017
Hydra Vision - Air to Air	1	2012	4	2017
Hydra VISION - Increment 1 - Air-to-Ground	1	2012	1	2016
Hydra VISION - Compact ATR Sustainable Env Analysis	2	2013	2	2014
Hydra VISION - Increment 2 - Air-to-Ground	3	2015	4	2018
Compact ATR - Compact Feature ATR	1	2014	2	2018
Compact ATR- Compact Feature ATR - Flight Demo	1	2018	1	2018
Compact ATR - Missionized ATR (MATR)	1	2015	3	2018
Enhanced CID	1	2012	4	2018
Studies	1	2012	4	2013
Studies (Resumed)	1	2015	4	2018
X-Patch Development	1	2012	4	2014

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology				PROJECT 642599: Cooperative Identification Techniques			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
642599: Cooperative Identification Techniques	-	2.091	9.364	1.874	-	1.874	1.899	1.932	1.965	2.000	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0		0	0	0	0	0		

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Cooperative Combat Identification (CID) employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide AF platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. Development funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet.

Within the air-to-air domain, programs funded to meet this intent include:

(1) Mode 5 Technology Insertion Program (TIP): This project funds preliminary RDT&E for Mark XIIA, the next generation Identification Friend or Foe (IFF) standard for the DoD and NATO. Mark XIIA represents a substantial enhancement to the Mark XII IFF system. It is expected to achieve Joint Initial Operational Capability in 2014. The "A" denotes the addition of Mode 5 (an encrypted challenge-and-reply mode) to the other Mark XII system modes (Modes 1, 2, 3/A, C, S, and 4). The Mode 5 secure IFF program is a DoD-wide, Navy-led development and acquisition program. The Mode 5 TIP specifically addresses implementation for air platforms by integrating Mode 5 into APX-119, APX-114, APX-113 and the UPX-40 transponder systems.

(2) Automatic Dependent Surveillance-Broadcast (ADS-B) Technology Insertion Program (TIP): This project performs preliminary integration of ADS-B architecture into the APX-119 Mark XIIA IFF transponder. The ADS-B TIP will develop ADS-B "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2 (M5L2) to achieve M5L2 "Out" capability. The ADS-B TIP specifically addresses implementing air platforms.

(3) Digital IFF Control Panel: This project develops a Digital IFF Control Panel (DCP) to support Mode 5 and ADS-B insertion programs into Air Force platforms with an ARINC 429 based avionics architecture. The DCP will provide a standard control panel for AF aircraft with built in capability for IFF support of ADS-B and beyond.

Within the air-to-ground domain, development funded by this project ensures development, integration, test and evaluation of friendly identification systems focused on reducing air-to-ground fratricide. Current efforts include investigation of Radio Based Combat Identification; an active challenge reply system leveraging Single Channel Ground and Airborne Radio System (SINCGARS) capable ground and aircraft targeting pod mounted radios for air-to-ground friendly identification.

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force			DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology	PROJECT 642599: Cooperative Identification Techniques		
Fund Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS)Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems. AIMS PO will continue to test and certify IFF equipment for the services now as long as IFF is used for combat identification.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2012	FY 2013	FY 2014
Title: ADS-B TIP Description: Automatic Dependent Surveillance-Broadcast (ADS-B) TIP: This project will fund preliminary RDT&E for integration of ADS-B architecture into the APX-119 Mark XIIA IFF transponder. The ADS-B TIP will develop ADS-B "Out" capability which leverages synergies between ADS-B and Mode 5 Level 2(M5L2) to achieve M5L2 "Out" capability. The ADS-B TIP specifically addresses implementing air platforms. FY 2012 Accomplishments: N/A FY 2013 Plans: Continue ADS-B TIP development of software and hardware into the APX-119 transponder. FY 2014 Plans: N/A			0.000	5.500	0.000
Title: AIMS Program Office Description: Fund Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS)Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems. FY 2012 Accomplishments: Continued to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment. FY 2013 Plans: Continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment. FY 2014 Plans: Will continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.			2.091	1.864	1.874
Title: Digital IFF Control Panel Description: This program element is upgrading the Digital IFF Control Panel as part of the ADS-B TIP to comply with DO-260B and AIMS 03-1000B. This is an upgrade to the basic Mode 5 Digital IFF Control Panel for ADS-B, Mode 5 software changes, and Mode 5 Level 2 corrections.			0.000	2.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Air Force		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642599: <i>Cooperative Identification Techniques</i>
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> N/A <i>FY 2013 Plans:</i> Continue to upgrade the Digital IFF Control Panel for ADS-B, Mode 5 changes, and Mode 5 Level 2 corrections. <i>FY 2014 Plans:</i> N/A			
Accomplishments/Planned Programs Subtotals		2.091	9.364
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
The schedule for ADS-B is only on the Cooperative Schedule.			
D. Acquisition Strategy			
Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).			
E. Performance Metrics			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology						PROJECT 642599: Cooperative Identification Techniques			
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Automatic Dependent Surveillance - Broadcast (ADS-B) Phase 2 & 3	SS/CPFF	Raytheon: Baltimore, MD	-	0.000		4.794	Aug 2013	0.000		-		0.000	Continuing	Continuing	TBD
Digital IFF Control Panel	C/CPFF	L-3 Comm: Greenville, TX	-	0.000		2.000		0.000		-		0.000	Continuing	Continuing	TBD
Subtotal			0.000	0.000		6.794		0.000		0.000		0.000			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	0.000
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Providing various technical support and assessing ADS-B capabilities. MITRE	C/T&M	MITRE: Bedford, MA	-	0.000		0.100	Dec 2012	0.000		-		0.000	Continuing	Continuing	TBD
Providing various technical support ETASS	TBD	TBD: TBD,	-	0.000		0.240	Apr 2013	0.000		-		0.000	Continuing	Continuing	TBD
Systems Engineering / Program Management (AIMS PO) AF616	C/FFP	WRALC/ENT: Robins AFB, GA	-	2.091	Nov 2011	1.864	Nov 2012	1.874	Nov 2013	-		1.874	Continuing	Continuing	TBD
Subtotal			0.000	2.091		2.204		1.874		0.000		1.874			

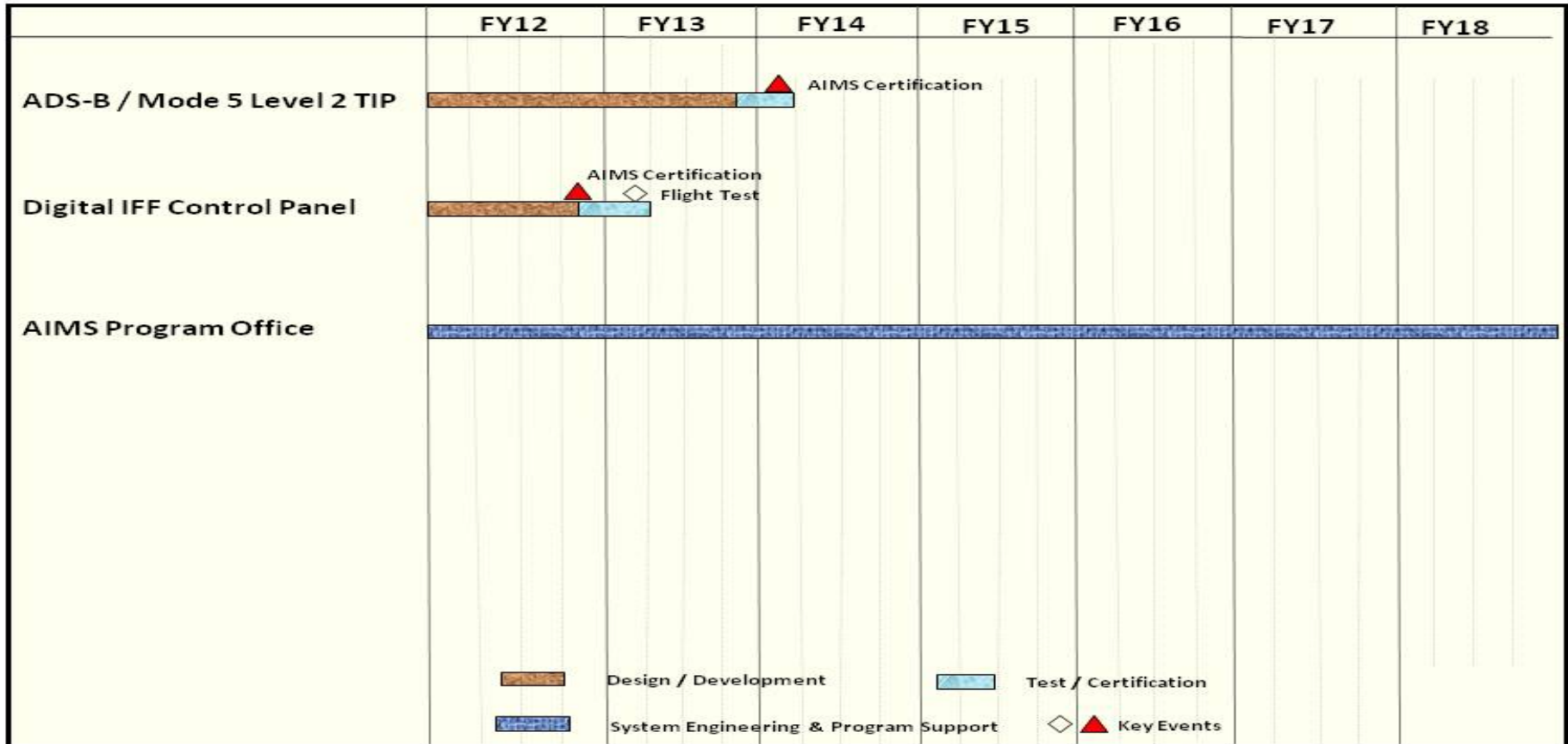
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Air Force												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 4: Advanced Component Development & Prototypes (ACD&P)						R-1 ITEM NOMENCLATURE PE 0603742F: Combat Identification Technology				PROJECT 642599: Cooperative Identification Techniques					
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Providing program office support - A&AS SCS	C/T&M	Tecolote:Bedford, MA	-	0.000		0.060	Oct 2012	0.000		-		0.000	Continuing	Continuing	TBD
Providing various technical support - PASS	C/TBD	TBD:TBD,	-	0.000	Apr 2012	0.240	Apr 2013	0.000		-		0.000	Continuing	Continuing	TBD
Program Office Support	Various	TBD:Bedford, MA	-	0.000		0.066	Oct 2012	0.000		-		0.000	Continuing	Continuing	TBD
Subtotal			0.000	0.000		0.366		0.000		0.000		0.000			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	2.091		9.364		1.874		0.000		1.874			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Air Force		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642599: <i>Cooperative Identification Techniques</i>

Cooperative CID Technology Schedule



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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Air Force			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test & Evaluation, Air Force</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603742F: <i>Combat Identification Technology</i>	PROJECT 642599: <i>Cooperative Identification Techniques</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ADS-B / M5L2 TIP	1	2012	1	2014
ADS-B / M5L2 TIP - AIMS Certification	1	2014	1	2014
Digital IFF Control Panel	1	2012	1	2013
Digital IFF Control Panel - AIMS Certification	4	2012	4	2012
Digital IFF Control Panel - Flight Test	1	2013	1	2013
AIMS Program Office Support	1	2012	4	2018